INTERNATIONAL BULLETIN OF PLANT PROTECTION

1933 No. 3

DISCOVERIES AND CURRENT EVENTS *

French North Africa: Desert Locust (*Schistocerca gregaria*) (1).

ALGERIA.

13 January 1933 — A small red swarm coming from the S. W. passed El-Goléa at 3 p. m., flying N.

15 » » — A pink swarm passed Colomb-Béchar.

17 » » — A red swarm coming from the W. settled at midday at Ouargla. Departed on 18th at 2 p. m., flying S. E.

19 » » — A large red swarm settled at Metilfa, Oued Gharbi (120 km S. S. W. of El Abiod-Géryville), departed towards the S. E.

23 » » — A medium sized red swarm coming from the N. passed El-Goléa at midday, flying S.

26 » » — A red swarm settled at Hassi Khenami (80 km E. S. E. of Ouargla).

27 » » — A red swarm settled at Hassi Tartrat (300 km. S S. E. of Ouargla). In the Gassi Touil numbers of locusts killed by frost (?) cover the ground over 20 km.

A small red swarm coming from the S. settled at Ghardaïa. Left again on 28th at 8 a. m., flying N.

28 » » — A large swarm coming from the W. passed el Oued, flying E.

A medium sized red swarm coming from the S. passed El Ateuf (8 km. E. S. E. of Ghardaïa) flying E.

29 » » — A large red swarm coming from the S. W. settled in the evening 1 km. E. of Guerrara (75 km. E. N. E. of Ghardaïa) Departed on the morning of the 30th, flying W.

A sparse red swarm coming from the W. (driven by a hot wind) settled at midday at Ouargla. Left at 3 p. m., flying E.

30 » » — A somewhat large red swarm coming from the S. E. passed over the Ouargla track 4 km N. of Zelfana (50 km E. S.E. of Ghardaïa), flying N. N. W.

31 » » — A red swarm of 10 × 1 km coming from the S. settled at 3 p. m. at Oued Messous, 60 km S. E. of Brézina (130 km S. S. E. of Géryville).

A swarm of 10 × 3 km coming from the S. settled at midday 10 km E. of El Abiod (100 km S. W. of Géryville). Departed on 1 February towards the N. E.

(*) Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

TUNIS.

29 January 1933 — A sparse pink swarm coming from the S. W. passed Djeffara on the road from Médenine to Beni Kreddache (15 to 20 km W. of Médenine), flying N. E.

31 » » — A large red swarm coming from the S. passed Bir Agareb (27 km W. of Kébili), going N.

A small red swarm coming from the W. passed Mergueb ed Diab (54 km E. S. E. of Kebili) flying E.

A small red swarm coming from the W. passed Bir Touil el Adara (61 km S. of Kebili), flying E.

MOROCCO.

1 January 1933 — A dense red swarm, 5 × 3 km, coming from the N.E. settled in the region of Tahanaout 15 km S. of Marrakech).

2 » » — A red swarm of 2 × 1 km coming from the S. settled to the N. of the forest of Adémine (Sous). Departed on the 3rd, flying N.E.

A red swarm of 5 × 3 km settled during the night to the N. of Chichaoua (region of Marrakech). Departed on the 3rd, flying W.

3 » » — A swarm coming from the forest of Ademine settled on the Aït Abbès (10 km E. of Agadir).

4 » » — A red swarm coming from the E. passed in the afternoon over Imi N' Tanout (region of Mogador), flying W.

A pink swarm of 4 × 2 km coming from the S passed the Ouled Ziad (30 km E. of Taroudant).

A swarm of 20 × 20 km coming from the S.E. settled during the night 30 km E. of Cap Ghir.

A red swarm of 5 × 3 km settled during the night on the Mouzgaoum, near Argana (region of Sous). Departed on the 5th at midday, flying W.

7 » » — A red swarm of 10 × 2 km coming from the S. settled on the Ida ou Bouzia (N. E. of Tamanar).

10 » » — Swarms reported in the Aït-Atta (border region).

11 » » — Numerous red swarms of 20 × 20 km coming from the S. and W. settled near Bou Arfa (Figuig). They did not continue N. on account of the cold in the Hauts-Plateaux.

14 » » — A red swarm of 3 × 2 km coming from the S. settled for the night on the Ida ou Bouzia (region of Mogador).

16 » » — Numbers of pink swarms settled along the road from Colomb-Béchar to Bou-Anane and Bou-Denib.

17 » » — Numerous pink swarms settled between Bou-Denib and Erfoud.

A red swarm of 6 × 3 km coming from the S. settled on the Ida ou Kazou (S. of Tamanar). Departed on the 18th flying N.E. and settled again in Ida ou Bouzia (E. of Tamanar).

19 January 1933 — A sparse swarm 20 km in length crossed the Atlas at the pass of Tizi N'Tichka (2,200 m) flying N. Descended the upper valley of the R'dat and settled in the afternoon between Tadert and Arhbalou.

Circling swarms at Ksar es Souk and S. of Kerrando

20 » » — A pink swarm of 1 sq. km passed 15 km N. of Tadiroust (border region), flying N.E.

23 » » — A pink swarm of medium density, 5 × 2 km, passed at 11.30 a. m. at Toulal and at 2.30 p. m. at Gourrama, flying N.W.

24 » » — A pink swarm of 2.5 × 1 km passed 1 km E. of Talsint, flying N.W.

South Australia: Some Crop Pests (1).

The 'Lucerne flea' (*Sminthurus viridis* L.) was generally active a month earlier in 1932, owing to the early autumn rains. The insect demands a high humidity in its surroundings, and the moisture in the surface soil is the most important factor affecting these conditions. Certain of the eggs remain viable in the dry surface soil during the summer months and hatch in autumn when the temperature and soil moisture are favorable. In the Adelaide hills district, in low-lying damp areas, active individuals may be noted until December. In similar situations the over-summering eggs were hatching out towards the end of February in 1932.

The cherry and pear slug (*Caliroa limacina* Retz. = *C. cerasi* Linn.) was recorded for the first time as a pest in South-Eastern districts in November, 1930.

The apple blossom thrips (*Thrips imaginis* Bagnall) occurred in plague numbers throughout the orchard and vine districts during the spring of 1931. Late flowering varieties of apples like 'Rome Beauty' suffered severely, but early varieties like 'Cleopatra' largely escaped damage as they blossomed before the period when the peak emergence of the thrips occurred. Berry fruits also suffered heavily. Vines were heavily infested in November and December, but there was no definite evidence that the setting of normal bunches of grapes was seriously affected.

Egypt: Desert Locust (*Schistocerca gregaria*) (2).

Egypt was invaded by swarms of the desert locust during 1932 on two occasions.

The first began on February 13 when two immature locust swarms passed over Kuntilla in Sinai flying westwards. Next day they were found settling

(1) Communication form the official correspondent of the Institute, Mr J. Davidson, D. Sc., F. E. S., Entomologist, Waite Agricultural Research Institute, University of Adelaide, Glen Osmond, South Australia.

(2) Communication from the Chief Plant Pathologist, Plant Protection Section, Ministry of Agriculture, Egypt, to the International Institute of Agriculture.

at Wadi Beidah, wandered about within our boundaries for two days and crossed the Eastern frontiers on the 16th. to Wadi Araba N. E. of Akaba.

Locust news from Transjordania confirmed the appearance of locusts at Akaba on January 28 and February 13. Sinai governorate reported that locusts were breeding extensively in some localities of Northern Hedjaz.

An official from the Plant Protection Section inspected all wadis of North Eastern Sinai. Only scattered individuals were found; most of the valleys were unsuitable for breeding. Another official was delegated to Sinai on March 25th. and remained in the Peninsula for a month during which be scouted several wadis but came through no locusts.

The second invasion started early in June when sexually immature swarms appeared suddenly at Hurgada, Kosseir and on the Red Sea coast opposite Assuan and penetrated to the Eastern Desert. Their movements were confined to this desert and the Province of Assuan.

The main points observed during this invasion were:—

(1) Practically all the locusts came from the N.E. and E. and flew S and S. W. with the blowing winds.

(2) Swarms were actually observed on several occasions crossing the Red Sea.

(3) The country lying between Wadi el Gemal and Bir Shelatin received most of the invaders.

They remained here about six days and devoured all the green vegetation of the desert.

(4) The Red Sea littoral from Kosseir to the Sudan frontiers was inspected by an official of the Plant Protection Section with a car patrol during the period from June 14th to the 23rd. Few scattered living red locusts were found in this long desert stretch with heaps of dead locusts on the shore

(5) In Assuan the majority of the locusts settled near the edge of cultivation. They were combatted by flame guns in the barren land or on trees and by collecting in the early morning.

(6) They caused very negligible damage.

(7) Brigades were distributed in the different agricultural centres from Edfu to El Derr bordering the Sudan.

(8) About June 15 the country was free from the pest. All locusts which escaped death penetrated into the Sudan.

* * *

On 12 January 1933, a big swarm of the desert locust was observed at Wadi Gilf Kebir in the Lybian Desert, Lat. 25° 10′, Long. 25°. The locusts completely devoured all the green vegetation growing in the vicinity. Further news are expected in the near future.

The part of the desert lying between Kom Ombo on the River Nile and Gebel Elba in the South Eastern Desert, Lat. 22° 10′, Long. 36° 40′, is being scouted at present for locust research work. This place is frequently visited by locusts.

United States of America: Losses due to Cranberry False Blossom in New Jersey (1).

The cultivated cranberry (*Vaccinium macrocarpon*) occupies a position almost unique in the horticulture of the United States in that it is a native plant grown chiefly within its natural range and one which has never as yet been influenced by artificial crossing or as far as is known affected by fungi from the outside. Perhaps for this reason, losses in the chief producing areas have, until the last decade, been confined largely to injuries due to flooding and frost and to fruit rots.

From a commercial standpoint the chief problem has been that of the control of the fruit rots. Sometime prior to 1908, however, there was discovered in Wisconsin a disease known as false blossom which during the past ten years has become so serious in the large cranberry growing sections of Massachusetts and New Jersey that it has been the subject of much study. The conspicuous features of cranberry false blossom, which may appear on different plants, are a malformation of the flowers, replacement of the flowers by short branches with small leaves, a tendency of affected plants to produce weak, slender branches from usually latent axillary buds giving a witches'-broom effect, and excessive vegetative growth.

In 1929 it was finally demonstrated that false blossom was readily transmitted by the leaf hopper, *Euscelis striatulus* Fall. Since that time vigorous measures have been undertaken for the control of this insect carrier and in Massachusetts at least the progress of the disease has apparently been slowed down. New Jersey on the other hand is now feeling the full force of what is evidently the most serious disease so far known to attack cranberries.

R. B. Wilcox has recently compiled statistics of yield of cranberries in New Jersey from 1889 to the present and has plotted curves using as an index for each year the average of that particular year with that of the two preceding and the two following years. These show in general a gradual increase both in total yield for the State and in the yield of the different varieties which reached a peak in 1923 or 1924. Since then the decline has been continuous and rapid. Considering the maximum yield (1923) as 100 per cent, production for the Early Black variety has fallen off 18 per cent, for the Howes 31 per cent, for the Champion 37 per cent, « Native Jerseys » 43 per cent, and for the Centennial 61 per cent. This represents a total reduction for all varieties of 33 per cent.

The rate of decline in production of the different varieties is directly comparable to their susceptibility to false blosson as observed in other regions. The figures as a whole furnish the most striking evidence of the severity of this disease. To find a parallel in the United States it would be necessary to go back to the destruction caused by peach yellows in the Delaware Peninsular and the Blue Ridge region in the last decade of the nineteenth century.

(1) Communication from the official correspondent of the Institute, Dr. Neil E. Stevens, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

Southern Rhodesia: Locust Invasion in 1932 (1).

Report No. 1. To End of September.

Following reports of southward movements of swarms of the Tropical Migratory Locust (*Locusta migratorioides*) in Nyasaland swarms of this species commenced to enter Southern Rhodesia from the N. E. on the 25th September and by the end of the month some six or seven swarms had been located. The general direction of flight was S. W.

The following districts have been invaded, namely, Lomagundi, Darwin, Mazoe, Mrewa, Mtoko, Hartley, Marandellas and Charter.

Specimens were obtained from two swarms and proved to be of the above species.

The ovaries were found on dissection to be poorly developed and egg-laying obviously distant.

The swarms have moved rapidly, and damage so far reported has been slight.

Report No. 2. Fortnight ending 15th October.

It has not been possible to follow the individual movements of all swarms in the Colony during the above period and some of the original swarms are reported to have split up. There are apparently some twenty to thirty swarms in the Colony, moving in a general S. W. to W. direction. Some swarms have been reported nearing and heading towards the Bechuanaland border in the Wankie, Nyamandhlovu, and Northern portion of Bulalima-Mangwe districts. One swarm was reported as far back as the Mrewa district on the 13th. Swarms have also been reported flying up both banks of the Zambesi River near its confluence with the Chiwore (3rd) and Recomitje (8th) Rivers.

The following districts were invaded or traversed during the period under review:— Inyanga, Umtali, Makoni, Mtojo, Mrewa, Salisbury, Marandellas, Charter, Hartley, Chilimanzi, Gwelo, Bubi, Sebungwe, Lomagundi, Wankie, Nyamandhlovu, and Bulalima-Mangwe.

Specimens examined have shown the ovaries to be 8 to 10 mm. long measured above the alimentary canal. Neither egg-laying nor mating has been reported.

Little feeding has been reported, and that mostly on young grass. A few reports of attack on young maize have been received and one report states that both old and new foliage of native trees has been devoured.

All specimens received, apparently representing from ten to fifteen swarms, were of the species *Locusta migratoria migratorioides*.

Report No. 3. Fortnight ending 29th October.

Comparatively few reports have been received concerning the movements of locusts during the period under review. The hindmost swarms reported were near Gatooma on 16th, and near Miami in the Lomagundi District on 17th.

(1) Communication from the official correspondent of the Institute, Mr. Rupert W. Jack, F. E. S., Chief Entomologist, Department of Agriculture, Entomological Branch, Salisbury, Southern Rhodesia.

Other reports refer to swarms near Gokwe in the Sebungwe District on 16th, Bubi District on the same date, Nyamandhlovu District on 18th and Wankie District on dates between 16th and 23rd.

It is surmised that the swarms, comprising the whole invasion, have either crossed over into Bechuanaland from the Wankie, Nyamandhlovu, and northern Bulalima Mangwe Districts, or have broken up or settled in the Kalahari between the Bulawayo-Victoria Falls Railway line and the Border.

All specimens received were of the species *L. m. migratorioides*.

VARIOUS QUESTIONS

Second Meeting of the Committee for the Study of Locust Biology at Algiers (1).

The second meeting of the Committee for the Study of Locust Biology [see this *Bulletin*, 1932, No. 5, pp. 74-79] was called at Algiers on 9-11 January 1933 by the Governor General of Algeria.

The following were among the questions discussed: –

Ségou-San-Timbuktu Expedition (French West Africa). — The expedition has been formed and has already begun its mission.

The problem before the Committee, whose ultimate object is the delimitation of the permanent breeding grounds, requires for its solution not only the determination and study of the biological characteristics of the locusts during transformation from the solitary to the gregarious phase, but also and more especially the study of the relations between the phenomena of the phases and the characteristics of the environment in which the locusts develop. The work of the expedition sent to study locust biology will therefore be many sided and will include: –

(1) the study of the biology and behaviour of the species ;

(2) a meteorological study of the localities investigated (climate of the region over which the species occurs and the micro-climate of stations within that region, that is to say, variations of temperature, humidity, insolation, etc. on small areas within the limits of the region in which the species develops) ;

(3) a botanic study of the habitat of the species ;

(4) research on the animal and plant associations of the biological communities to which the species studied belongs.

The areas inhabited by *Locusta migratoria* and *Schistocerca gregaria* are very extensive ; the position of the permanent breeding grounds are only inferred from the directions taken by swarms and the study of specimens from different regions.

(1) From the Report of the minutes of the Meeting communicated to the International Institute of Agriculture by its official correspondent, Mr M. Delassus, Chief of the Crop Protection Service, Government General of Algeria, Algiers.

The fullest possible documentary evidence is essential for directing the researches of the expedition into the regions where the necessary conditions for the formation of permanent breeding grounds occur. Further, the personnel of the expedition must be supplied with equipment and appliances to enable them to make and preserve scientific collections and to make and record the necessary observations.

The collections and records obtained by the expedition can be studied only in part in the field. Provision must therefore be made for supplementary study under normal laboratory conditions.

The first work of the expedition was carried out in the Circle of Macina in the Macina - Dioura - Dia region.

Traces of numerous swarms of *L. migratoria migratorioides* ph. *gregaria* were found along the banks of the Niger between Bamako and Macina.

L. migratoria migratorioides ph. *solitaria* was observed for the first time about forty kilometres up the river from Macina.

On leaving Macina a band of *L. migratoria migratorioides* ph. *congregans* was observed on the Monimpé dyke. It covered an area of approximately 10 square metres and was made up of hoppers of the first to the penultimate stage.

At Monimpé and at Nono, villages outside but near to the flood zone, there were large quantities of *L. migratoria migratorioides* in the winged stage. They belonged to the gregarious phase, and had all only recently become winged.

During the journey from Famessala to Dia by canoe through the grasses emerging from the floods it was found that the grass was inhabited by adults of *L. migratoria migratorioides* in the solitary phase.

The same fact was observed at Dia where locusts were found on the still flooded part of the plain as well as on that from which the floods had receded. All the locusts taken in the flood zone between Tamessala and Dia belonged to the generation which had developed before the floods during the winter of 1932.

Study of the females showed that the degree of development of the ovaries at the time of observation was closely related to the nature of the locality occupied by the species. On a low-lying island which had been only partly flooded and for only a short time all the females taken had developing ovaries. In the zone in which the floods had recently subsided but in which the ground was already dry, 82 % of the females had ovaries in process of development. In the zone from which the floods had just subsided but where the ground was muddy and covered with pools the percentage was only 14 %. A comparison of the data obtained at Dia on ovary development with data obtained at Macina and Nono shows that at Macina, which is above Dia and from which the floods subsided early in November, the development of the generation after the winter one was ahead of that of Dia, and hoppers of all stages of this new generation were observed on 28 November.

At Nono, which is beyond the flood zone, a generation of *L. migratoria migratorioides* following the winter generation was able to develop at the end of the

winter and the adults of this generation must have appeared about October and November.

The discovery of the relationship between the maturing of the ovaries in *L. migratoria migratorioides* and the degree of flooding of the zone by the waters of the Niger may be of primary importance for defining the position of the zone in relation to the permanent breeding centres of the species.

A study of the behaviour of *L. migratoria migratorioides* during and after the retreat of the flood waters, together with a study of the climatic peculiarities of the season, may certainly throw some light on the question.

No specimens of *Schistocerca gregaria* were observed on the journey from Bamako to Gao. According to information collected over the region between Bourem and Tobankort small bands of hoppers, numerous but of little importance, were observed in the Tilemsi valley during the rainy season of 1932. About 250 kilometres north of Tobankort in the zone between the Sahel and the desert several specimens of *Schist. gregaria* ph. *solitaria* were observed on 1 January 1933.

During the rainy season (June-October) the study of *L. migratoria migratorioides* must be undertaken in the zone bordering on the flood zone of the Niger to the north of Macina.

The proximity of this latter region to the valley of Tilemsi where information and observations have shown the presence of *Schist. gregaria* allows the hope that it may be possible to concentrate the investigations of the two species in the relatively restricted area of the loop of the Niger. Goundam may be named as the probable centre of the activities of the expedition.

Biological study of the Moroccan locust (*Dociostarus maroccanus*). — The study of the transformation of this locust fronm the sedentary to the migratory phase [see this *Bulletin*, 1932, No. 5, p. 76] will be carried out under the auspices of the Government General of Algeria.

Questionnaires. — In the questionnaire approved by the first meeting of the Committee [see this *Bulletin*, 1932, No. 5, pp. 77-78] the following modification was adopted: — ' Indicate also the orientation of the axis of the insect in flight '.

The Committee also adopted a second model questionnaire including only essential questions. The following is the wording of the simplified questionnaire :—

I. — Observations on the passage of migratory swarms.

(1) Locality ;
(2) Distance and direction in relation to a fixed point on a map (scale 1 : 2,000,000) ;
(3) Date and hour ;
(4) Direction of flight ;
(5) Species recognised (Attach wing of a specimen insect from the swarm) ;
(6) Time of settling and departure.

II. — Observations on laying.

(1) Locality ;
(2) Date ;
(3) Direction from which locusts arrived ;
(4) Description of breeding grounds.

Internal organisation of the Committee. — According to this ruling the Committee has as local information centres : —

for Algeria — the Crop Protection Service of Algeria;
for Morocco — the Crop Protection Service of Morocco;
for Tunisia, for French West Africa, for French Equatorial Africa } the Phytopathological Branch of the Agricultural Service.

The permanent centre is the Crop Protection Service of Algeria.

The Committee includes in the first instance the executive members appointed by the VIIth North African Conference and delegates from the various countries that are members of the organisation. Any competent person may be co-opted in a consultative capacity.

In addition to the information collected by the local centres the Committee receives documentation from scientific organisations and voluntary research workers relating to locust biology.

The Committee follows the general instructions given by International Conferences and in its turn presents to the Conferences resolutions which it considers should be adopted.

In connexion with technical questions the Committee corresponds directly with the Imperial Institute of Entomology of London which is the International Centre for Locust Studies.

It prepares and presents recommendations to the Governor General of Algeria for questions relating to Algeria and through its intermediary for those relating to other Governments of French Africa.

Draft of the resolutions of the Committee for the VIIIth North African Conference. — ' Referring again to the question of locust biology considered by previous Conferences the VIIIth North African Conference decides : —

(1) That the Committee for the Study of Locust Biology having its headquarters in Algiers and supplied with information by the local Crop Protection Services or, failing that, by the competent Administrative Service of the Countries taking part, has its permanent centre in the Crop Protection Service of the Government General of Algeria;

(2) That the choice of the organisations and persons to be co-opted in a consultative capacity shall be left to the Committee ;

(3) That the funds for the current expenses of the permanent centre, for the publication of the works of the Committee or the expeditions, for the remuneration of the specialised staff, for the equipment and personnel of expeditions, for the travelling expenses of the members of the Committee for the Study of Locust Biology, shall, on the recommendation of the Committee and by decision of the Governor General of Algeria, be taken from the competition fund managed by the Experiment Garden of Hamma ;

(4) That in order to secure the continuity of the research work already initiated which will require an annual expenditure of about 800,000 francs, each

of the Governments of French Africa shall make an annual contribution, so long as may be required, to the funds of the Experiment Garden and on behalf of the Competition Fund, calculated in proportion to the size of its budget so as to make up a total of 800,000 francs'.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Algeria (1). — By Governatorial Decree of 13 December 1932 the importation into Algeria of potatoes, tomatoes and eggplants grown in France may take place only by the ports open to importation of plants and in which there is a Crop Protection official.

These products, whatever be their origin, provenance and purpose (seed or consumption), will on arrival be submitted to a sanitary inspection, all packages being opened at the expense and at the risk of the consignee.

The above-named products must be free from soil and plant débris and enclosed in clean and sound packings.

The consignments must be accompanied by a trade invoice if they come from an establishment under State control and if not by a declaration from the consignor, in either case indicating exactly the names and addresses of the consignor and consignee, the number, weight and marks of the packages, the varieties of the products, the communes and departments in which they were grown and the date of consignment.

Potatoes, tomatoes and eggplants coming from territories of France not included in the official list of zones infected with Colorado beetle [*Leptinotarsa decemlineata*] or the zones of protection may enter Algeria at any season.

The above-named products coming from territories included in the infected or protection zones may be sent to destinations in Algeria only during the so-called winter period, commencing 1 October of each year and ending 15 May of the following year, these extreme dates being modifiable by Decree of the Governor General.

Consignments not conforming with the conditions prescribed by the present Decree will be returned or destroyed according to the wish and at the expense of the persons concerned by the Customs Service.

All previous regulations not conforming with the present Decree are annulled.

Germany (**Thuringia**) (2). — By Decree No. 201 of 28 December 1932 concerning the control of elm disease (*Graphium Ulmi*) any occupier of land who shall observe that elms growing on his land show symptoms of this disease, such as wilting or sudden yellowing of the foliage on branches or whole trees, or any other person who shall become aware of the outbreak of this disease, is required to notify within a week the authority of the Commune concerned. The Communal

(1) Communication from the official correspondent of the Institute, Mr M. Delassus, Chief of the Crop Protection Service, Government General of Algeria, Algiers.

(2) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin – Dahlem, official correspondent of the Institute.

authority will inform the higher authority who will have the elms examined by the Central Station for Plant Protection of Jena.

The occupier of the land must allow this examination by the experts and put at their disposal any parts of the trees that they may require. The occupier must, in accordance with the severity of the attack and the instructions of the Station for Plant Protection, cut back the infected branches or fell the trees found to be infected If the trees are lopped the cut surfaces must be coated with tar and the removed branches must be destroyed with fire.

Felled trees must have the bark removed and burnt and the infected branches must also be burnt. The timber must be used as soon as possible, The stumps of felled trees must be grubbed up or, in cases in which this does not seem practicable, they must be coated with tar or carbolineum. New shoots which develop later must be destroyed each year.

The regional authority must communicate to the competent forest authority the instructions prescribed to the occupier of the land.

Chile. — By Decree Law No. 147 of 6 July 1932 lead arsenate and certain oils intended for the protection of plants and entering on account of the Institute of Agricultural Credit are exempt from custom duties. (*Deutsches Handels-Archiv*, Berlin 1932, 86. Jahrg., 2. Dezemberheft, S. 2756).

Spain. — A Ministerial ' Orden ' of 10 December 1932 contains enactments relating to applications for authorisation for exporting dried fruits and vegetables to France.

The regulations established by previous enactments of the Ministry of Agriculture, Industry and Commerce regulating the exportation of fruits and fresh vegetables to France remain unchanged in all that is not expressly altered or modified by the present ' Orden '. (*Gaceta de Madrid*, Madrid, 11 diciembre 1932, año CCLXXI, tomo IV, núm. 346, págs. 1809 a 1811).

*** By a Law of 20 December 1932 a supplementary grant of 100,000 ' pesetas ' has been allowed for the purpose of controlling locusts in the provinces of Santa Cruz de Tenerife and Las Palmas. (*Gaceta de Madrid*, Madrid, 23 diciembre 1932, año CCLXXI, tomo IV, núm. 358, pág. 2058).

France. — A Ministerial Decree of 20 December 1932 indicates the zones declared infested with the Colorado beetle [*Leptinotarsa decemlineata*] and the zones of protection in the following Departments : — Ain, Allier, Indre-et-Loire, Jura, Landes, Loire-Inférieure, Loiret, Loir-et-Cher, Lot, Lot-et-Garonne, Maine-et-Loire, Manche, Mayenne, Morbihan, Orne, Puy-de-Dôme, Basses-Pyrénées, Hautes-Pyrénées, Saône-et-Loire, Sarthe, Seine-et-Oise, Deux-Sèvres, Tarn, Tarn-et-Garonne, Vendée, Vienne, Haute-Vienne. (*Journal Officiel de la République Française*, Paris, 4 février 1933, LXV^{ème} année, n° 30, p. 1220-1226).

Hungary (1). - The Decree No. 49,000/1932-VII-3, published 18 August 1932, contains regulations relating to the national organisation for plant protection, which came into force on 1 October 1932.

(1) From a communication from the Royal Hungarian Legation in Italy to the International Institute of Agriculture.

The Royal Hungarian Plant Protection Service includes the following :—

(1) The Council for Plant Protection.

(2) The Royal Hungarian Institute for experimental research concerned with plant protection, which includes three Sections (Phytopathology Section, Entomology Section and Phytobiological Chemistry Section).

(3) The Central Organisation for Plant Protection, namely :—

(*a*) the Plant Protection Bureau and

(*b*) the Practical Plant Protection Service organised within the Bureau

(4) The provincial organisations for plant protection, namely :—

(*a*) the Plant Protection Centres existing in the various districts of the country;

(*b*) the persons in charge of local plant protection (landowners who have received the necessary instruction).

The hign administrative and scientific control of the organisations under the Royal Hungarian Plant Protection Service are in the hands of the competent Section of the Royal Hungarian Ministry of Agriculture (at present Section VII-3 ' Rural Police ').

This Decree is accompanied by a list and facsimile signatures of the specialised officials appointed to sign the certificates issued by the Royal Hungarian Plant Protection Service.

Italy. — By Ministerial Decree of 20 December 1932, which came into orce on 1 March 1933, importation and transit of the following plants and plant parts are forbidden :—

(*a*) Plants and fruits of Cactaceae coming from any country whatever, in view of the risk of introducing insects, fungi and bacteria harmful to the prickly pear [*Opuntia Ficus-indica*].

(*b*) Plants and parts of plants belonging to the Coniferous genera *Abies*, *Picea*, *Pinus*, *Pseudotsuga* and *Tsuga*.

The importation of plants and parts of plants belonging to other Coniferous genera is authorised subject to the presentation of a certificate issued by the phytopathological authorities of the country of origin, written in Italian or French, stating that the plants or plant parts in the consignment are free from diseases and dangerous parasites and, in particular, from *Rhabdocline Pseudotsugae*.

The certificate must, further, indicate the origin of the merchandise, the name of the species to which belong the products consigned and all the data necessary for identifying the consignment. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 14 febbraio 1933, anno 74°, n. 37, p. 611).

*** The Ministerial Circular No. 44609 of 21 December 1932 addressed to the Directors of the Royal Phytopathological Observatories calls attention to the regulations of the Ministerial Decree of 3 March 1927 [see this *Bulletin*, 1927, No. 3, pp. 41-43] with a view to the most rigorous testing of seed of forage crops (lucerne, clover, etc.) for importation into Italy. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 1° febbraio 1933, anno V, n. 3, pp. 342-343).

*** By Law No. 1871 of 22 December 1932 the Royal Decree Law No. 913 of 20 June 1932 [see this *Bulletin*, 1932, No. 11, p. 185] modifying article 31 of the Law No. 987 of 18 June 1931 containing enactments relating to the protection of cultivated plants and agricultural products against diseases and pests and to the services relating thereto, has been made Law. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 31 gennaio 1933, anno 74°, n. 25, p. 407).

*** The Law No. 1933 of 22 December 1932 carries modifications of article 19 of the Law No. 987 of 18 June 1931 [see this *Bulletin*, 1931, No. 9, p. 166] containing enactments relating to the protection of cultivated plants and agricultural products against diseases and pests and to the services relating thereto.

In consequence of this modification the annual contribution to be paid by each member of the Consortiums (Syndicates) for the protection, improvement and increase of crops, as also any expenses incurred in effecting the necessary operations and defence measures will be payable by the landowners, who will have the right to exact the refunding of their expenditure by the tenants, share tenants or other person concerned in any way in the farm, in the measure, in the cases and with the restrictions that shall be fixed in the Regulations for the application of the Law No. 897 of 18 June 1931, the system of farming the land being taken into account. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 7 febbraio 1933, anno 74°, n. 31, p. 510).

Turkey. — By Circular of the Direction General of Customs Houses, published 16 October 1932, copper sulphate and sulphur intended for use in the protection of plants may be imported duty-free on condition that the products have been previously examined by the Customs House chemist and found to conform to the following requirements :—

The copper sulphate must have a purity of 98-99 % and be composed of large crystals, without many broken crystals, and must not have suffered from exposure to the air. The colour must be clear blue without green stains.

The sulphur must contain only little foreign matter and not more than 5 % of ash. The fineness must be between 60 and 70° Chancel and it must be soluble in carbon disulphide. (*Deutsches Handels-Archiv*, Berlin 1933, 87. Jahrg., 1. Januarheft, S. 92-93).

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[The parasites found by the writer in Jugoslavia are :— *Herpestomus brunneicornis, Angitia armillata, Pimpla examinator, P. maculator, Agrypon anxium, Brachymeria minuta, Ageniaspis fuscicollis, Tetrastichus crassinervis, Dischochaeta cognata, Agria mamillata.* The hyperparasites are :— *Tetrastichus crassinervis, Mesochorus confusus, Hemiteles scabriculus, Hemiteles* sp., *Pteromalus variabilis, Elasmus flabellatus, Monodontomerus aereus*].

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